200400184

No.

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

The J.C. Robinson Seed Company

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC [illegible]NISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR [illegible]RTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE [illegible] PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT [illegible]D BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'W16090'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this ninth day of March, in the year two thousand and seven.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
D TECHNOLOGY DIVISION - PLANT VARIETY PROTECT

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U. S. C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U. S. C. 2426).

JMS 6/23/06

1. N F OWNER

~~JC Robinson Seeds~~
The J. C. Robinson Seed Company

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME

3. VARIETY NAME

W16090

4. ADDRESS *(Street and No., R.F.D. No., City, State, and ZIP Code, and Country)*

100 JC Robinson Blvd.
PO Box A
Waterloo, Nebraska 68069

5. TELEPHONE *(include area code)*

(800) 330-9692

6. FAX *(include area code)*

(402) 779-2910

FOR OFFICIAL USE ONLY

PVPO NUMBER

2004 00184

FILING DATE

April 22, 2004

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZAITON *(corporation, partnership, association, etc.) (Common name)*

Corporation

8. IF INCORPORATED, GIVE STATE OF INCORPORATION

Nebraska

9. DATE OF INCORPORATION

8/01/1964

FEES RECEIVED

FILING AND EXAMINATION FEE:

$ 3652.00

DATE 4/22/04

CERTIFICATION FEE:

$ 768.00

DATE 2/20/07

10. NAME AND ADDRESS OF REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*

Eric J. Jarecki
Research Information Coordinator
PO Box A
Waterloo, Nebraska 68069

11. TELEPHONE *(include area code)*

(402) 289-6503

12. FAX *(include area code)*

(402) 779-2910

13. FAX

EJJARECKI@JCROB.CO

14. CROP KIND NAME *(Common name)*

Corn

15. GENUS AND SPECIES NAME

Zea Mays L.

16. FAMILY NAME *(Botanical)*

Gramineae

17. IS THE VARIETY A FIRST GENERATION HYBRID?

[ ] YES [X] NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*

a. [X] Exhibit A. Origin and Breeding History of the Variety
b. [X] Exhibit B. Statement of Distinctness
c. [X] Exhibit C. Objective Description of the Variety
d. [X] Exhibit D. Additional Description of the Variety (Optional).
e. [X] Exhibit E. Statement of the Basis of the Applicant's Ownership
f. [X] *Voucher Sample: (2,500 viable untreated seeds or, for tuber propegated varieties verification that tissue culture will be deposited and maintained in an approved public repository)*
g. [X] Filing and Examination Fee ($3,652), made payable to "Treasurer of the United States" *(Mail to Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*

[ ] YES *(If "yes", snswer items 20 and 21 bleow)* [X] NO *(If "no", go to item 22)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES [ ] YES [ ] NO
IF YES, WHICH CLASSES? [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VAIRETY BE LIMITED AS TO NUMBER OF GENERATIONS [ ] YES [ ] NO
IF YES, SPECIFY THE [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED
NUMBER 1, 2, 3, etc.
(If additional explanation is necessary, please use the space indicated on the reverse)

22. HAS THE VARIETY (INCLUDING AND HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U.S. OR OTHER COUNTRIES? [ ] YES [X] NO

IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER,OR USE FOR EACH COUNTRY AND THE CIRCUNSTANCES. (Please use space indicated on reverse.)

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? [ ] YES [X] NO

IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse*

24. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with applicaiton and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*

Eric J. Jarecki

NAME *(Please print or type)*

Eric J. Jarecki

CAPACITY OR TITLE

Research Information Coordinator

DATE

4-22-04

SIGNATURE OF APPLICANT *(Owner(s))*

NAME *(Please print or type)*

CAPACITY OR TITLE

DATE

ST-470 (02-10-2003) designed by the Plant Protection Office using Word 2000. Replaces former versions of STD-470, which are obsolete.

(See reverse for instructions and information collection burden statement)

200400184

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable *(in the sense that it will reproduce an entire plant)* tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for $3,652 ($432 filing fee and $3,220 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice.)* Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of $432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office
Telephone: (301) 504-5518
FAX: (301) 504-5291
Homepage: http://www.ams.usda.gov/science/pvpo/pvp.htm

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 http://www.ams.usda.gov/lsg/seed.htm.

ITEM

19a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

20. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

23. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

24. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

22. CONTINUED FROM FRONT *(Please provide a statement as to the limitation and sequence of generations that may be certified.)*

23. CONTINUED FROM FRONT *(Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)*

24. CONTINUED FROM FRONT *(Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)*

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)*

ST-470 (04-03) designed by the Plant Variety Protection Office using Word 2002.

Origin and Breeding History of W16090

Exhibit A:

W16090 is a corn inbred line developed from the single cross of JCRNR113/GSC1 the pedigree method of breeding. Selfing and selection were conducted seven generations in its development. The selection criteria used in the development of W16090 included: grain yield, high plant density tolerance, good stand establishment, silking and pollen shedding ability, stalk and root strength, stay green appearance during senescence, seed quality, and disease tolerance. Testcrosses with unrelated inbreds were made and evaluated over multiple years and locations in the promotion of W16090 to commercial status in hybrid combination.

JCRNR113, a progenitor of W16090, is a proprietary field corn inbred of The J.C. Robinson Seed Co. and has utility patent number 6072019. GSC1, a progenitor of W16090, is a proprietary field corn inbred of The Golden Seed Company (an associate company selling the Golden Harvest brand of seed).

W16090 has shown uniformity and stability for all traits as described in Exhibit C – "Objective Description of Variety". It has been self pollinated and ear-rowed for seven generations, with careful attention given to uniformity of plant type to ensure homozygosity and phenotypic purity. During the advanced stages of development, hand-pollinated increases of W16090 were observed by the developing breeder to assure stability and uniformity of the inbred line for at least three generations as an inbred as well as in hybrid combinations. No variant traits have been observed or are expected in W16090.

Development history of W16090:

Location/Season/Year	Inbreeding Level	Pedigree/Ear Id.
ECNurs/04/1998	S0 self	JCRNR113/GSC1)-X
PRSelf8/11/1998	S1 self & select	JCRNR113/GSC1)-X-9
ECNurs/04/1999	S2 self & select	JCRNR113/GSC1)-X-9-1
HISelfAll/11/1999	S3 self & select	JCRNR113/GSC1)-X-9-1-1
ECNurs/04/2000	S4 self & select	JCRNR113/GSC1)-X-9-1-1-2
HISelfAll/11/2000	S5 self & select	JCRNR113/GSC1)-X-9-1-1-2-1(W16090)
FCNSY-West/04/2001	S6 self & initial bulk	JCRNR113/GSC1)-X-9-1-1-2-1-2(A)

Exhibit B. W16090 most closely resembles JCRNR113

The following color traits are uniquely different from the check:

	W16090			JCRNR113		
Trait	Number Value	Color	Munsell Code	Number Value	Color	Munsell Code
Anther Color	6	Pale Yellow	2.5Y8/6	22	Tan	5Y8/4
Silk Color	14	Red	5R4/10	5	Green-Yellow	2.5GY8/8
Cob Color	14	Red	5R5/8	11	Pink	5R7/6

The following traits are highly significant at the 1% level (Student's t-Test procedure) for each location analysis as well as the combined location analysis:

Exhibit B. t-test statistics, (Most closely resembles).

		W16090			JCR NR113			Mean		
Trait	Loc	N	Mean	SD1	N	Mean	SD2	Diff	t-Value	Prob
Plant Height	1	15	181.4	7.6	15	196.5	7.3	-15.1	-5.55	0.0000
Plant Height	2	15	203.1	7.4	15	211.9	5.9	-8.9	-3.62	0.0012
Plant Height	Avg	30	192.2	13.3	30	204.2	10.2	-12.0	-3.93	0.0002
Leaf Width	1	15	9.1	0.4	15	10.5	0.8	-1.4	-6.07	0.0000
Leaf Width	2	15	8.9	0.5	15	10.2	0.8	-1.3	-5.66	0.0000
Leaf Width	Avg	30	9.0	0.5	30	10.3	0.8	-1.4	-8.29	0.0000
Leaf Length	1	15	68.1	3.4	15	63.2	4.2	4.9	3.57	0.0013
Leaf Length	2	15	73.3	2.2	15	67.4	3.3	5.9	5.81	0.0000
Leaf Length	Avg	30	70.7	3.8	30	65.3	4.3	5.4	5.19	0.0000
Degrees Leaf Angle	1	15	15.8	4.1	15	27.4	5.6	-11.6	-6.47	0.0000
Degrees Leaf Angle	2	15	19.0	5.3	15	28.2	4.6	-9.2	-5.11	0.0000
Degrees Leaf Angle	Avg	30	17.4	4.9	30	27.8	5.0	-10.4	-8.09	0.0000
Tassel Length	1	15	33.7	3.2	15	37.9	2.1	-4.3	-4.36	0.0002
Tassel Length	2	15	36.2	2.4	15	40.0	2.8	-3.8	-3.94	0.0005
Tassel Length	Avg	30	34.9	3.1	30	39.0	2.6	-4.0	-5.45	0.0000
Ear Weight	1	15	91.7	10.2	15	107.5	14.4	-15.8	-3.47	0.0017
Ear Weight	2	15	81.7	12.1	15	114.9	6.3	-33.2	-9.42	0.0000
Ear Weight	Avg	30	86.7	12.1	30	111.2	11.5	-24.5	-8.02	0.0000
Shank Length	1	15	26.7	2.2	15	17.8	1.9	9.0	11.84	0.0000
Shank Length	2	15	28.9	4.2	15	21.3	2.1	7.6	6.27	0.0000
Shank Length	Avg	30	27.8	3.5	30	19.5	2.6	8.3	10.37	0.0000
% Round Kernels	1	15	41.6	11.2	15	15.7	3.5	25.9	8.58	0.0000
% Round Kernels	2	15	49.6	12.4	15	22.1	3.4	27.5	8.29	0.0000
% Round Kernels	Avg	30	45.6	12.3	30	18.9	4.7	26.7	11.12	0.0000
Cob Diameter	1	15	24.8	1.4	15	22.6	0.9	2.3	5.11	0.0000
Cob Diameter	2	15	25.5	1.2	15	23.1	1.0	2.4	5.87	0.0000
Cob Diameter	Avg	30	25.1	1.3	30	22.8	1.0	2.3	7.62	0.0000

EXHIBIT C
(Corn: Maize)

United States Department of Agriculture, Agricultural Marketing Service
Science Division, Plant Variety Protection Office
National Agricultural Library Building, Room 500
Beltsville, MD 20705

OBJECTIVE DESCRIPTION OF VARIETY
CORN (Zea mays L.)

Name of Applicant(s)	Variety Seed Source	Variety Name or Temporary Designation
The J.C. Robinson Seed Company	Foundation O2NH PCH	W16090

Address (Street No., or R.F.D., City, State, Zip Code and Country)	FOR OFFICIAL USE
100 J.C. Robinson Blvd., Waterloo, NE 68069 USA	PVPO Number 2004 00184

Place the appropriate number that describes the varietal characters typical of this inbred variety in the spaces below. Right justify whole numbers by adding leading zeroes if necessary. Completeness should be striven for to establish an adequate variety description. Traits designated by a ' * ' are considered necessary for an adequate variety description and must be completed.

COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices: describe #25 and #26 in Comments section):

01=Light Green	06=Pale Yellow	11=Pink	16=Pale Purple	21=Buff
02=Medium Green	07=Yellow	12=Light Red	17=Purple	22=Tan
03=Dark Green	08=Yellow-Orange	13=Cherry Red	18=Colorless	23=Brown
04=Very Dark Green	09=Salmon	14=Red	19=White	24=Bronze
05=Green-Yellow	10=Pink-Orange	15=Red White	20=White Capped	25-Varigated (Describe)
				26=Other (Describe)

STANDARD INBRED CHOICES (Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data):

Yellow Dent Families:

Family	Members
B14	CM105, A632, B64, B68
B37	B37, B76, H84
B73	N192, A679, B73, NC268
C103	Mo17, Va102, Va35, A682
Oh43	A619, MS71, H99, Va26
WF9	W64A, A554, A654, Pa91

Yellow Dent (Unrelated):
Co109, ND246
Oh7, T232
W117, W153R
W182BN

White Dent:
CI66, H105, Ky228

Sweet Corn:
C13, Iowa5125, P39, 2132

Popcorn:
SG1533, 4722, HP301, HP7211

Pipecorn:
Mo15W, Mo16W, Mo24W

1. TYPE (describe intermediate types in Comments section) * 2 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Ornamental 7=Pipecorn	Standard Inbred Name 2	A632
2. REGION WHERE DEVELOPED IN THE U.S.A.: * 2 1=Northwest 2=Northcentral 3=Northeast 4=Southeast 5=Southcentral 6=Southwest 7=Other	Standard Seed Source 2	FCNurs 001910

3. MATURITY (In Region Best Adaptability: show Heat Unit formula in "Comments" section):

	DAYS	HEAT UNITS		DAYS	HEAT UNITS
*	065	1283.5	From emergence to 50% of plants in silk	067	1340.0
*	065	1284.8	From emergence to 50% plants in pollen	065	1286.0
	002	0053.5	From 10% to 90% pollen shed	001	0026.0
(*)			From 50% silk to optimum edible quality		
			From 50% silk to harvest at 25% moisture		

4. PLANT:

		Standard Deviation	Sample Size		Standard Deviation	Sample Size
*	192.2 cm Plant Height (to tassel tip)	13.3	30	199.0	12.9	30
*	054.4 cm Ear Height (to base of top ear node)	07.3	30	078.6	07.3	30
	012.9 cm Length of Top Ear Internode	01.2	30	011.9	01.2	30
	0.0 Average Number of Tillers	00.0	30	0.0	00.0	30
	1.3 Average Number of Ears per Stalk	00.5	30	1.3	00.5	30
*	3 Anthocyanin of Brace Roots: 1=Absent 2=Faint 3=Moderate 4=Dark			4		

2004 00184

Application Variety Data W16090 Page 2			Standard Inbred Data A632		
5. LEAF	Standard Deviation	Sample Size		Standard Deviation	Sample Size
* 009.0 cm Width of Ear Node Leaf	0.5	30	008.2	0.6	30
070.7 cm Length of Ear Node Leaf	3.8	30	070.9	4.3	30
* 06 Number of leaves above top ear	0.6	30	07	0.5	30
017 Degrees Leaf Angle	4.9	30	046	6.7	30
(measure from 2nd leaf above ear at anthesis to stalk above leaf)					
* 04 Leaf Color (Munsel code) 7.5GY5/2			03 ~~09~~ (Munsel code)		7.5GY 4/4 ~~7.5YR8/4~~
3 Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)			3		
3 Marginal Waves (Rate on scale from 1=none to 9=many)			4		
6 Longitudinal Creases (Rate on scale from 1=none to 9=many)			5		
6. TASSEL:	Standard Deviation	Sample Size		Standard Deviation	Sample Size
* 05 Number of Primary Lateral Branches	01.8	30	07	01.9	30
025 Branch Angle from Central Spike	10.5	30	041	08.3	30
* 34.9 cm Tassel Length	03.1	30	33.6	02.3	30
(from top leaf collar to tassel tip)					
8 Pollen Shed (Rate on scale from 0=male sterile to 9=heavy shed)			7 ~~09~~		
06 Another Color (Munsel code) 2.5Y8/6			~~09~~ (Munsel code)		5Y 7/6 ~~5YR7/4~~
~~05.25~~ Glume Color (Munsel code) 5GY5/8			25 * (Munsel code)		~~5GR5/8~~ 5GY 3/8
1 Bar Glumes (Glume Bands): 1=Absent 2=Present			1		
7a. EAR (Unhusked Data):					
14 Silk Color (3 days after emergence) (Munsel code) 5R4/10			~~09~~ 05 (Munsel code)		2.5GY 8/8 ~~7.5YR8/4~~
01 Fresh Husk Color (25 days after 50% silking) (Munsel code) 5GY7/6			02 (Munsel code)		5GY6/4
21 Dry Husk Color (65 days after 50% silking) (Munsel code) 10YR9/2			21 (Munsel code)		10YR9.0/2.0
2 Position of Ear at Dry Husk Stage: 1=Upright 2=Horizontal 3=Pendant			2		
5 Husk Tightness (Rate on scale from 1=very loose to 9=very tight)			3		
2 Husk Extension (at harvest): 1=Short (ears exposed) 2=Medium (<8 cm)			3		
3=Long (8-10 cm beyond ear tip) 4=Very Long (>10 cm)					
7b. EAR (Husked Ear	Standard Deviation	Sample Size		Standard Deviation	Sample Size
13.4 cm Ear Length	01.3	30	15.2	01.5	30
40.5 mm Ear Diameter at mid	01.7	30	39.7	01.5	30
086.7 gm Ear Weight	12.1	30	088.8	14.2	30
15 Number of Kernel Rows	01.4	30	16	01.1	30
2 Kernel Rows: 1=Indistinct 2=Distinct			2		
1 Row Alignment: 1=Straight 2=Slightly Curved 3=Spiral			1		
27.8 cm Shank Length	03.5	30	09.6	01.3	30
1 Ear Taper: 1=Slight 2=Average 3=Extreme			1		
Application Variety Data			Standard Inbred Data		

Note: Use chart on first page to choose color codes for color traits.

* We are seeing variegation on glume color for A632 ranging from green yellow to green ~~red~~ w/ red stripes

JMS 6/23/06

JMS 6/23/06

JMS 11/24/06

200400184

Application Variety Data	W16090	Page 3		Standard Inbred Data	A632	
8. KERNEL (Dried)		Standard Deviation	Sample Size		Standard Deviation	Sample Size
10.9	mm Kernel Length	00.4	30	10.0	00.5	30
07.9	mm Kernel Width	00.5	30	07.5	00.4	30
04.4	mm Kernel Thickness	00.4	30	04.4	00.4	30
45.6	% Round Kernels (Shape Grade)	12.3	30	56.8	15.2	30
1	Aleurone Color Pattern: 1=Homozygous 2=Segregating			1		
(*) 18	Aleurone Color (Munsell code)	COLORLESS		18	(Munsell code)	COLORLESS
* 07	Hard Endosperm Color (Munsell code)	2.5Y8/10		07	(Munsell code)	2.5Y8/10
* 03	Endosperm Type: 1=Sweet (sul) 2=Extra Sweet (sh2) 3=Normal Starch 4=High Amylose Starch 5=Waxy Starch 6=High Protein 7=High Lysine 8=Super Sweet (se) 9=High Oil 10=Other			03		
27.5	gm Weight per 100 Kernels (unsized sample)	01.5	30	25.6	01.9	30
9. COB		Standard Deviation	Sample Size		Standard Deviation	Sample Size
* 25.1	mm Cob diameter at mid-point	01.3	30	24.5	00.8	30
14	Cob Color (Munsell code)	5R5/8		14	(Munsell code)	5R4/10

10. DISEASE RESISTANCE (Rate from 1 (most susceptible) to 9 (Most resistant): leave blank if not tested: leave Race or Strain Options blank if polygenic):

A. Leaf Blights, Wilts, and Local		
Anthracnose Leaf Blight (Colletotrichum graminicola)		
Common Rust (Puccinia sorghi)		
Common Smut (Ustilago maydis)		
Eyespot (Kabatiella zeae)		
Goss's Wilt (Clavibacter michiganese spp. nebraskense)		
Gray Leaf Spot (Cercospora zeae-maydis)		
Helminthosporium Leaf Spot (Bipolaris maydis)	Race	Race
Northern Leaf Blight (Exserohilum turcicum)	Race	Race
Southern Leaf Blight (Bipolaris maydis)	Race	Race
Southern Rust (Puccinia polysora)		
Stewart's Wilt (Erwinia stewartii)		
Other (Specify)		
B. Systemic diseases		
Corn Lethal Necrosis (MCMV and MDMV)		
Head Smut (Sphacelotheca reiliana)		
Maize Chlorotic Dwarf Virus (MCDV)		
Maize Chlorotic Mottle Virus (MCMV)		
Maize Dwarf Mosaic Virus (MDMV)	Strain	Strain
Sorghum Downy Mildew of Corn (Peronosclerospora sorghi)		
Other (Specify)		
C. Stalk Rots		
Anthracnose Stalk Rot (Colletotrichum graminicola)		
Diplodia Stalk Rot (Stenocarpella maydis)		
Fusarium Stalk Rot (Fusarium moniliforme)		
Gibberella Stalk Rot (Gibberella zeae)		
Other (Specify)		
D. Ear and Kernel Rots		
Aspergillus Ear and Kernel Rot (Aspergillus flavus)		
Diplodia Ear Rot (Stenocarpella maydis)		
Fusarium Ear and Kernel Rot (Fusarium moniliforme)		
Gibberella Ear Rot (Gibberella zeae)		
Other (Specify)		

Application Variety Data

Note: Use chart on first page to choose color codes for color traits.

Standard Inbred Data

Application Variety Data — Page 4	Standard Deviation	Sample Size	Standard Inbred Data — Standard Deviation	Sample Size
11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant): leave blank if not tested):				
Banks Grass Mite (Oligonychus pratensis)				
Corn Earworm (Helicoverpa zea)				
Leaf-Feeding				
Silk Feeding :				
mg larval wt.				
Ear Damage				
Corn Leaf Aphid (Rhopalosiphum maidis)				
Corn Sap Beetle (Carpophilus dimidiatus)				
European Corn Borer (Ostrinia nubilalis)				
1st Generation (Typically Whorl Leaf Feeding)				
2nd Generation (Typically Leaf Sheath-Collar Feeding				
Stalk Tunneling				
cm tunneled/plant				
Fall Armyworm (Spodoptera frugiperda)				
Leaf-Feeding				
Silk-Feeding :				
mg larval wt.				
Maize Weevil (Sitophilus zeamaize)				
Northern Rootworm (Diabrotica barberi)				
Southern Rootworm (Diabrotica undecimpunctata)				
Southwestern Corn Borer (Diatraea grandiosella)				
Leaf Feeding				
Stalk Tunneling :				
cm tunneled/plant				
Two-spotted Spider Mite (Tetranychus urticae)				
Western Rootworm (Diabrotica virgifera virgifera)				
Other (Specify)				
AGRONOMIC TRAIT				
Stay Green (at 65 days after anthesis) (Rate on a scale from 1=worst to 9=excellent.)				
% Dropped Ears (at 65 days after anthesis)				
% Pre-anthesis Brittle Snapping				
%Pre-anthesis Root Lodging				
%Post-anthesis Root Lodging (at 65 days after anthesis)				
Kg/ha Yield of Inbred Per Se (at 12-13% grain moisture)				

13. MOLECULAR MARKERS: (0=data unavailable: 1=data available but not supplied: 2=data supplied)

Isozyme	RFLP's	RAPD's

REFERENCE

Butler, D.R. 1954. A System for the Classification of Corn Inbred Lines. PhD Thesis, Ohio State University.

Emerson, R.A., G.W. Beadle, and A.C. Fraser, 1935. A Summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 180.7.35

Farr, D.F., G.F.Bills, G.P. Chamuris, A.Y. Rossman, 1989. Fungi on Plant and Plant Products in the United States. The American Phytopathological Society, St. Pa

Inglett, G.E. (Ed) 1970. Corn: Culture, Processing, Products. Avi Publishing Company, Westport, CT.

Jugenheimer, R.W. 1976. Corn: Improvement, Seed Production, and Uses. John Wiley Sons, New York.

McGee, D.C. 1988. Maize Diseases. APS Press, St. Paul, MN 150 pp.

Munsell Color Chart for Plant Tissues. Macbeth, P.O. Box 230, Newburgh, M.Y. 12551-0230

The Mutants of Maize, 1968. Crop Science Society of America, Madison, WI.

Shurtleff, M.C. 1980. Compendium of Corn Diseases. APS Press, St. Paul, MN. 105 pp.

Sprague, G.F., and J.W. Dudley (Editors), 1988. Corn and Corn Improvement, Third Edition, Agronomy Monograph 18. ASA, CSSA, SSSA, Madison, WI

Stringfield, G.H. Maize Inbred Lines of Ohio, Ohio A.E.S., Bul. 831. 1959.

U.S. Department of Agriculture, 1936. 1937. Yearbook.

COMMENTS (eg. state how heat units were calculated, standard inbred seed source, and/or where data was collected. Continue in Exhibit D):

General Information W16090

Two trials were grown in East Central Nebraska near Waterloo, Nebraska for the purpose of observing data on trait characteristics for PVP and patenting requirements.

Trial 1 (location 1 in the data) was planted 5/9/2002.
Trial 2 (location 2 in the data) was planted 5/17/2002.

Multiple dates were timed throughout the growing season to observe the various traits at their maximum expression. Approximately 120 plants were grown in four row plots. 15 plants from the middle two rows were sampled for recording trait information.

The heat units or GDU (growing degree units) is the number of heat units required for an inbred line to reach either silk emergence or pollen shed from the time of planting. Heat units are calculated by the Barger method, where the heat units for a 24 hour-period are:

$$GDU = \frac{\text{Max.} + \text{Min.}}{2} - 50$$

The highest maximum used is 86 degrees Fahrenheit and the lowest minimum used is 50 degrees Fahrenheit. For each inbred line, it takes a certain number of heat units to reach various stages of plant development. They are a way of measuring plant maturity.

The Student's t-Test using Total Access Statistics, (an add-in to Microsoft Access) analysis is used to show significant differences from the standard check it most closely resembles. A normal distribution is assumed for this analysis.

The following information is additional information per your October 24, 2006, Corn Application No. 200400184, 'W16090' letter.

The trials were grown in a nested (RCB) randomized complete block design. It was nested to gain maximum precision for observed traits for the new varieties' comparison with the standard inbred variety. In other words, the true varieties were planted in close proximity to each other. The objective (hypothesis) of the trial was to collect data on different traits to compare between different varieties for Exhibits B, C, and C on the PVP application forms.

Data were collected on 15 different plants per location per trait for each entry in the trial for statistical analysis. The data were collected at varying stages throughout the growing season.

Accumulated GDU and Rainfall for 2002:

Month	GDU	Rainfall
May	363	3.8
June	1122	1.1
July	1949	2.9
Aug	2700	1.3

Exhibit D. W16090 additional information GSC1

The following color traits are uniquely different from the check:

	W16090			GSC1		
Trait	Number Value	Color	Munsel Code	Number Value	Color	Munsel Code
Anther Color	6	Pale Yellow	2.5Y8/6	9	Salmon	5YR7/4

The following traits were observed to be different between the inbred and the check:

	W16090		GSC1	
Trait	Number Value	Description	Number Value	Description
Leaf Sheath Pubescence	3	1=none to 9=like peach fuzz	7	1=none to 9=like peach fuzz
Husk Extension	2	Medium	1	Short

The following traits are highly significant at the 1% level (Student's t-Test procedure) for each location analysis as well as the combined location analysis:

Exhibit D. t-test statistics, (Additional information).

		W16090			GSC1			Mean		Prob
Trait	Loc	N	Mean	SD1	N	Mean	SD2	Diff	t-Value	
Plant Height	1	15	181.4	7.6	15	202.7	9.0	-21.3	-6.99	0.0000
Plant Height	2	15	203.1	7.4	15	223.1	6.1	-20.0	-8.02	0.0000
Plant Height	Avg	30	192.2	13.3	30	212.9	12.8	-20.6	-6.12	0.0000
Ear Height	1	15	50.6	6.1	15	58.8	7.5	-8.2	-3.30	0.0027
Ear Height	2	15	58.1	6.5	15	64.5	5.5	-6.4	-2.90	0.0072
Ear Height	Avg	30	54.4	7.3	30	61.7	7.1	-7.3	-3.93	0.0002
Length of Top Ear Internode	1	15	12.6	1.1	15	14.9	1.0	-2.3	-6.02	0.0000
Length of Top Ear Internode	2	15	13.3	1.2	15	17.3	2.2	-4.0	-6.26	0.0000
Length of Top Ear Internode	Avg	30	12.9	1.2	30	16.1	2.1	-3.2	-7.22	0.0000
Tassel Length	1	15	33.7	3.2	15	36.2	1.4	-2.6	-2.88	0.0076
Tassel Length	2	15	36.2	2.4	15	39.1	2.0	-2.9	-3.49	0.0016
Tassel Length	Avg	30	34.9	3.1	30	37.7	2.2	-2.7	-3.92	0.0002
Ear Length	1	15	13.6	1.0	15	18.3	1.2	-4.6	-11.24	0.0000
Ear Length	2	15	13.2	1.5	15	19.0	0.9	-5.8	-12.89	0.0000
Ear Length	Avg	30	13.4	1.3	30	18.6	1.1	-5.2	-16.83	0.0000
Ear Weight	1	15	91.7	10.2	15	118.7	6.6	-27.1	-8.64	0.0000
Ear Weight	2	15	81.7	12.1	15	124.5	8.4	-42.8	-11.28	0.0000
Ear Weight	Avg	30	86.7	12.1	30	121.6	7.9	-35.0	-13.21	0.0000
Shank Length	1	15	26.7	2.2	15	15.9	2.9	10.8	11.44	0.0000
Shank Length	2	15	28.9	4.2	15	16.7	2.6	12.1	9.52	0.0000
Shank Length	Avg	30	27.8	3.5	30	16.3	2.7	11.5	14.20	0.0000

REPRODUCE LOCALLY *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVCIE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U. S. C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U. S. C. 2426).

JMS 6/23/06

1. NAME OF APPLICANT(S)
The J. C. Robinson Seed Company
~~JC Robinson Seeds~~

2. TEMPORARY DESIGNATION EXPERIMENTAL NUMBER

3. VARIETY NAME
W16090

4. ADDRESS *(Street and No., R.F.D. No., City, State, and ZIP Code, a*
100 JC Robinson Blvd.
PO Box A
Waterloo, Nebraska 68069

5. TELEPHONE *(include area code)*
(402) 289-6503

6. FAX *(include area code)*
(402) 779-2910

7. PVPO NUMBER **2004 00184**

8. Does the applicant own all rights to th *Mark an "X" in appropriate* If no, please explain. [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [X] YES [ ] NO
If no, give name of country

10. Is the applicant the original own [X] YES [ ] NO *If no, please answer ONE of the following:*

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) national(s)?
[X] YES [ ] NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
[X] YES [ ] NO If no, give name of country

11. Additional explanation on ow *(if needed, use reverse for extra space)*

The variety for which Plant Variety Protection is hereby sought was developed by Homer Caton, an employee of the JC Robinson Seeds company. By agreement between the employee and the JC Robinson Seeds company all rights to any invention, discovery, or development made by the employee while employed by the JC Robinson Seeds company are assigned to the JC Robinson Seeds company with no right of any kind retained by the employee.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person myst be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s). the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.